

REMARKS

In response to Office Action (OA) mailed on 10/19/2005, applicant cancels claims 14 - 23 as pertaining to a non-elected invention, affirming the election made by telephone on 10/06/2005.

In response to OA regarding elected claims 1 - 13, applicant respectfully requests reconsideration of the rejection under 35 U.S.C. 102(e) and 103(a), submitting that the cited prior art documents do not anticipate, nor render the present invention obvious for one of ordinary skill in the art.

The OA states: "Claims 1-4, 7-9, 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Ouyang et al (US2005/0093021)." Before entering a discussion on technical details, applicant would like to broadly paint a picture regarding the Ouyang et al (US2005/0093021) (Ouyang-21), prior art document. Ouyang-21 teaches a MOS transistor, the present disclosure (PD) teaches a photodetector. These two are non-overlapping art categories. The only similarity between Ouyang-21 and the PD is that both contain an epitaxial single-crystal layer of SiGe, which has a thickness below a "critical thickness". All other elements, and importantly the interrelatedness of elements, are quite different in the two inventions. Applicant would like to respectfully emphasize that the interrelatedness between various elements is an organic, and distinguishing feature of any claim.

Regarding claim 1 OA states: "As to claim 1, Ouyang et al disclose a monocrystalline Si well (40) of a first conductivity type (n-type), Si well (40) has a surface plane (60), and Si well (40) contains at least one trench (54) downwardly extending from surface plane; ... " Applicant would like now to point out the differences in the interrelatedness of the elements between claim 1 and Ouyang-21. Ouyang-21 stated of element 40 (paragraph 19 line 2) "... a crystalline body 40 essentially consisting of Si." If one is to regard element 40 as a "Si well" as in claim 1, it can only be so because trenches (54) on its perimeter would define it to be so. Accordingly, the well (40) cannot contain the trench (54) contrary to what OA states. Furthermore in Fig. 1C of Ouyang-21 it is very clear that the trench (54) does not extend downwardly from surface plane (60), but that the two intersect.

OA further states: "... an undoped epitaxial layer lining (20) with one trench (54), wherein undoped epitaxial layer comprises a $\text{Si}_{1-x}\text{Ge}_x$ layer (20) with $0 < x < 1$, wherein $\text{Si}_{1-x}\text{Ge}_x$ layer (20)

has a thickness of (5nm, 15nm) which is below a critical thickness, wherein a cross sectional surface of undoped epitaxial layer (20) forms a band which is substantially aligned with said surface plane; ... " Claim 1 states of the undoped epitaxial layer that it is lining the trench, while in Ouyang-21 layer (20) does not even touch trench (54), accordingly, how could it be "lining it"? Furthermore, the "cross sectional surface of undoped epitaxial layer (20)" of Ouyang-21 is not aligned with surface plane 60, but perpendicular to it. Or, if OA prefers to take as the "cross sectional surface band" the epitaxial interface between layer (20) and layer (30) of Ouyang-21, then the next statement of the OA : "... and a second material (Si layer 30) of a second conductivity type disposed over undoped epitaxial layer (20) but not in contact with said band .." is clearly not agreeing with Ouyang-21 because layer (30) is in intimate contact with the band.

Applicant's review of paragraphs 0019, 0020, and 0021 in Ouyang-21 failed to turn up any teaching for a structure as claimed in claims 1 of the PD. Applicant would respectfully ask a little more specificity in the OA, regarding exactly which lines of Ouyang-21 contain these teachings. Applicant emphasizes the need to find such teaching in the text in Ouyang-21, because as herein discussed, the Figures 1A - 1C and 2A and 2B of Ouyang-21 so obviously depict a manifestly different structure than does Fig. 1, -- and claim 1 -- of the PD.

In view of the presented clarifying remarks applicant respectfully ask for reconsideration of rejection of claim 1, in view of Ouyang-21, contending that claim 1 of the PD is not anticipated, and thus, patentable over Ouyang-21.

Applicant further submits that if independent claim 1 is patentable, then dependent claims 2 -13 by introducing further limitations are a fortiori patentable. However, a few points regarding these dependent claims might still be useful to address. Applicant does not know how to interpret OA's statement regarding claim 11: "As to claim 11, Ouyang et al disclose Si well (40) has a first doping level (Si), and Si well (40) is in contact with a monocrystalline Si body (40) of first-conductivity type (n-type), wherein Si body (40) has a second doping level (SiGe), and wherein first doping level (Si) is higher than second doping (SiGe) level, (see fig. 1, paragraph [0019])." Is the Si well (40) same as the and body (40)? Is it contacting itself? How is Si and SiGe a doping level? Ge and Si are both group IV elements, they can't act as dopant for each other. Fig. 1 of Ouyang-21 and paragraph [0019] hold no clue to the answer of these questions.

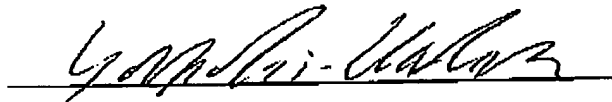
Ryum at al (US2002/0058388) dealing with SiGe bipolar transistors, does have various combinations of Si and SiGe discussed, but how this connects to the "shallow trenches 54, usually made of SiO₂" (paragraph 0017 line 15) of Ouyang-21 or to the Si layer (3) of Ouyang-21 is not only not anticipatory, it is utterly teaching away from the PD, which has none of the above. Also, would the OA please explain in relation to claim 10, how the contacts of Ryum at al (US2002/0058388) could be applied to Ouyang-21, and then how their combination have any prima facie relevance for claim 10.

CLOSING STATEMENTS

Applicant respectfully submits that as displayed in the present response the application claims only patentable subject matter.

Applicant further submits that this application is now in condition for allowance, which action is respectfully requested.

Respectfully,



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